

WHAT IS CLAIMED IS:

1. A process automation system, comprising:
process devices that execute predetermined functions as part of the process automation and thereby exchange data that are relevant to at least one of the functions and the devices within the process automation system,
wherein some but less than all of the data are exchanged in encrypted form.

2. A process automation system as claimed in Claim 1, wherein at least some of the data are exchanged in encrypted form and, in parallel, in unencrypted form.

3. A process automation system as claimed in Claim 2, wherein the encrypted data is exchanged with a lower priority in comparison with the unencrypted data.

4. A process automation system as claimed in Claim 1, wherein the encrypted data is exchanged with a lower priority in comparison with unencrypted data.

5. A process automation system as claimed in Claim 3, wherein the process devices comprise memories that collect the encrypted data before the data are exchanged.

6. A process automation system as claimed in Claim 1, further comprising a central key administration that registers public encryption keys of the process devices and authenticates the public encryption keys with a private encryption key of the central key administration.

7. A process device for a process automation system, comprising:

- a function device executing predetermined functions as part of process automation; and
- a communication device connected to the function device and configured to connect into a process automation system for exchange of data, within the process automation system, that relate to at least one of a function and a device;
- wherein the communication device comprises means for performing the exchange of some but less than all of the data in encrypted form.

8. A method for a process automation system having a plurality of process devices, comprising:

- generating transmission data in one of the process devices;
- encrypting at least some but less than all of the transmission data to produce encrypted transmission data and unencrypted transmission data;
- receiving the encrypted transmission data and the unencrypted transmission data in another of the process devices;

decrypting the encrypted transmission data in the other process device.

9. The method according to claim 8, further comprising:

storing the at least some transmission data in order to prioritize the unencrypted transmission data.

10. The method according to claim 8, wherein:

the process devices have respective public and private encryption keys, and
the encrypting and the decrypting utilize a public encryption method.

11. The method according to claim 10, further comprising:

authenticating the public keys in a central key administration.

12. The method according to claim 8, wherein the encrypted transmission data comprises solely data determined to require security.